

REMARKS

Claims 1-23 are pending in the present application. In the Office Action, claims 1-11 and 13-22 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Alamouti (U.S. Patent No. 5,931,965) in view of Camp (U.S. Patent No. 5,592,517). The Examiner's rejections are respectfully traversed.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Furthermore, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. That is, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. Finally, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

A recent Federal Circuit case emphasizes that, in an obviousness situation, any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35. Moreover, it is claimed invention, as a whole, that must be considered for purposes of determining obviousness. A mere selection of various bits and pieces of the claimed invention

from various sources of prior art does not render a claimed invention obvious, unless there is a suggestion or motivation in the prior art for the claimed invention, when considered as a whole.

Alamouti describes a technique for trellis encoding signals that involves constructing an encoder output table and a state transition table. Alamouti also notes that certain lookup table encoder implementations may result in catastrophic codes. In order to avoid these catastrophic codes, Alamouti describes a modification that may be made to the state transition lookup table. See Alamouti, col. 22, ll. 6-32. However, as admitted by the Examiner on page 3 of the Office Action, Alamouti fails to teach or suggest periodically inserting known symbols into a digital input data sequence, as set forth in independent claims 1, 6, and 15.

Camp describes a digital interpolator that includes one or more CCI filters, which may include an inner differentiator-integrator pair connected in series by an upsampling switch that increases the data rate of the differentiator output by the interpolating factor. For example, for an interpolating factor of 20, the switch inserts 19 zeros between every pair of successive data points from the inner differentiator output. See Camp, col. 10, ll. 3-10. The Examiner then alleges that it would have been obvious to a person of ordinary skill in the art to include the upsampling switch described by Camp in the trellis encoder described by Alamouti so that 19 zeros can be inserted between each pair of successive data points to avoid catastrophic errors.

Applicant respectfully disagrees and submits that the present invention is not obvious in view of the prior art of record for the following reasons. First, neither Alamouti nor Camp provide any suggestion or motivation to combine and/or modify the prior art of record to arrive at the entirety of the claimed invention. Contrary to the Examiner's allegations, Camp does not teach or suggest that inserting zeros into a digital input data sequence may help to avoid catastrophic errors. In fact, Camp is concerned with digital interpolation and is therefore

completely silent with regard to catastrophic errors that may be produced by a trellis encoding scheme. Consequently, Camp fails to provide any suggestion or motivation for combining and/or modifying the prior art of record. Camp also fails to provide any expectation that the Examiner's proposed combination will successfully avoid catastrophic errors produced by trellis encoding schemes.

On the other hand, as admitted by the Examiner, Alamouti fails to teach or suggest periodically inserting known symbols into a digital input data sequence. Moreover, Alamouti teaches that some catastrophic codes may be avoided by a simple modification to the state transition lookup table. See Alamouti, col. 22, ll. 24-32. Accordingly, Alamouti provides no suggestion or motivation for inserting any known symbols into a digital input data sequence, much less for inserting 19 zeros for every pair of input data pairs, as described by Camp. Alamouti also fails to provide any expectation that the Examiner's proposed combination of elements of Camp and Alamouti will successfully avoid catastrophic errors produced by the trellis encoding schemes described in Alamouti.

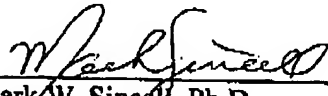
For at least the aforementioned reasons, Applicant respectfully submits that the Examiner has failed to make a *prima facie* case that the present invention is obvious over Alamouti and Camp, either alone or in combination. Applicant respectfully requests that the Examiner's rejections of claims 1-11 and 13-22 under 35 U.S.C. 103(a) be withdrawn.

The Examiner has indicated that claims 12 and 23 contain allowable subject matter. Claims 12 and 23 depend from independent claims 6 and 15, respectively. Accordingly, for at least the reasons discussed above with regard to independent claims 6 and 15, Applicant respectfully submits that claims 12 and 23 are in condition for allowance and requests that the Examiner's objections to claims 12 and 23 be withdrawn.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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